

# The Pension Funding Crisis: Critical Issues and Potential for Progress

*Economic Perspectives on State and Local Taxes*

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# Outline

- Current situation
- Flawed incentives and weak institutions
- Possible reforms

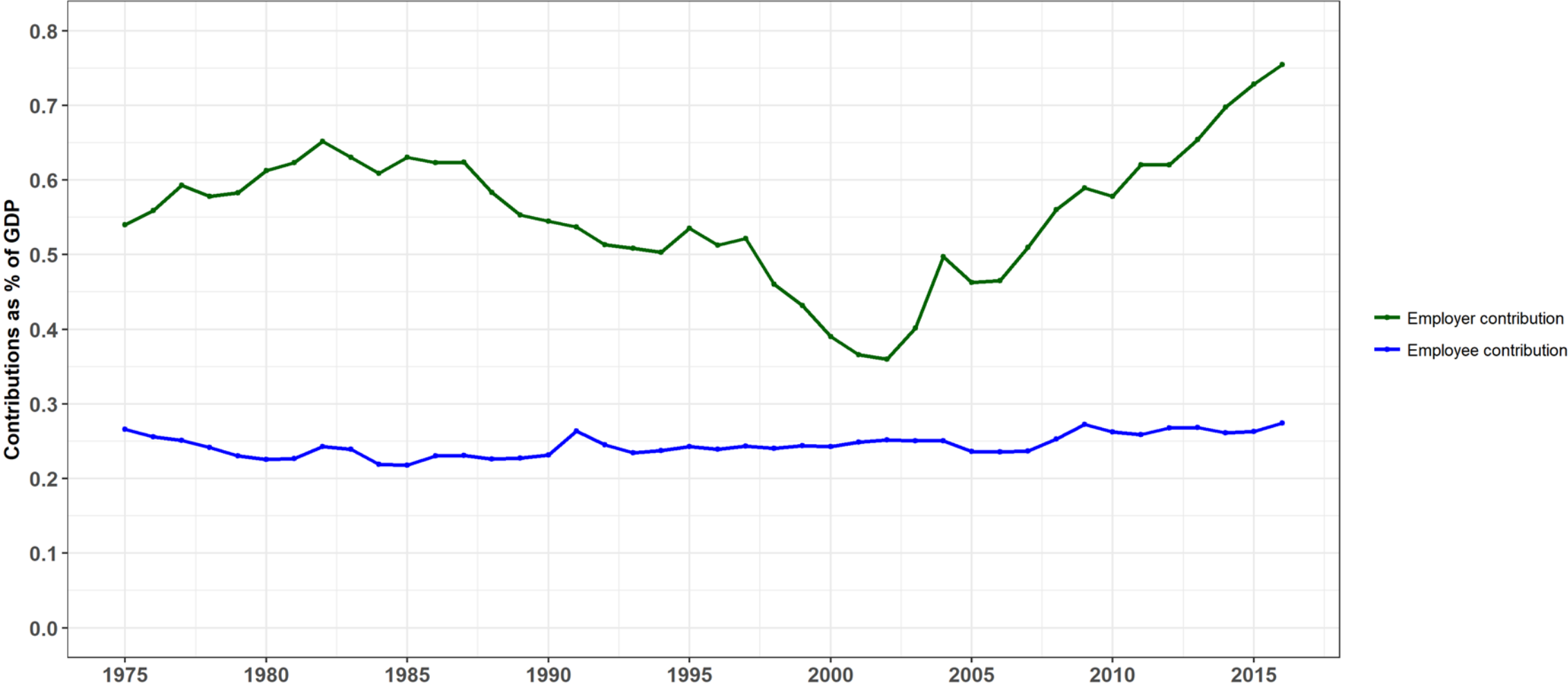
See first appendix page for selected acronyms.

# Current situation

# Employer contributions have increased substantially

Employer and employee pension contributions as % of Gross Domestic Product

State and locally administered plans combined, U.S. as a whole

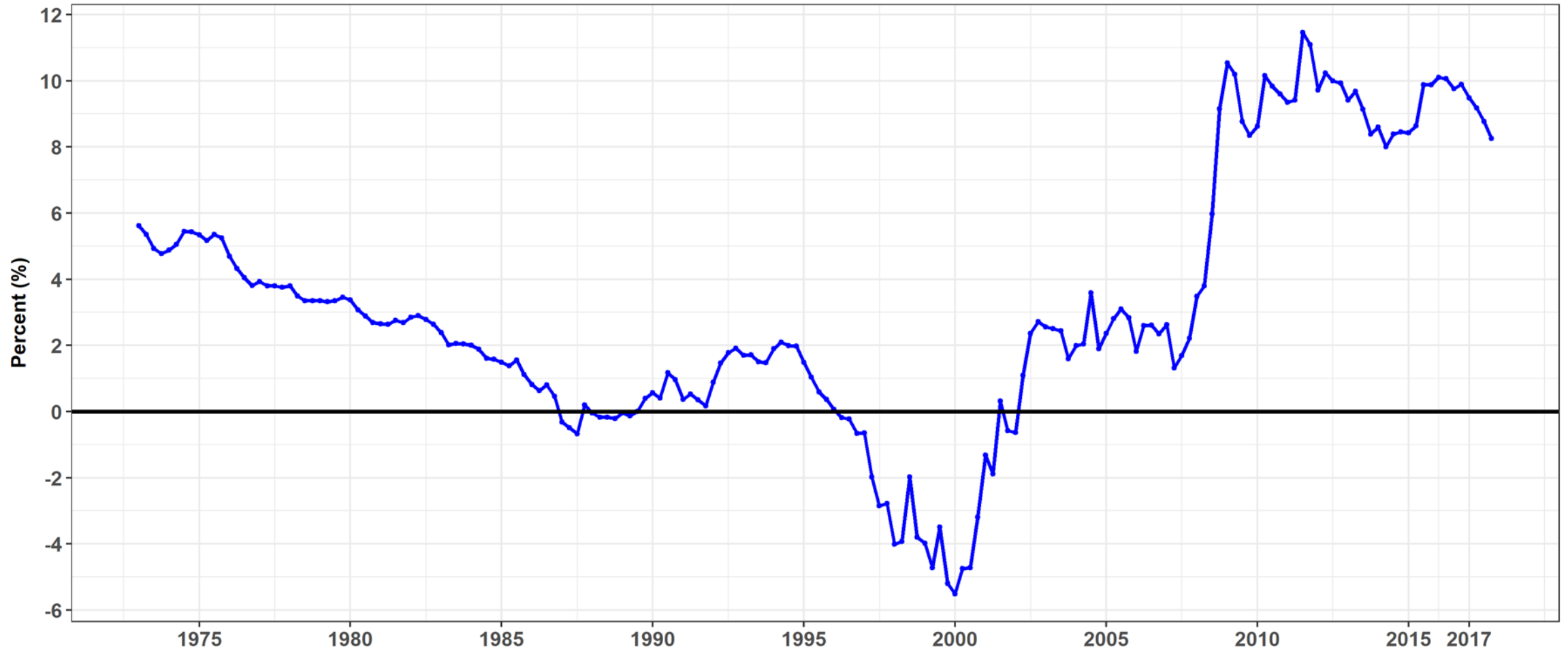


Contributions from U.S. Bureau of the Census Annual Retirement Systems Survey

# Despite contribution increases and widespread benefit changes, unfunded liabilities are near record relative to economy

## Unfunded liability of state and local government defined benefit pension plans

As percentage of Gross Domestic Product

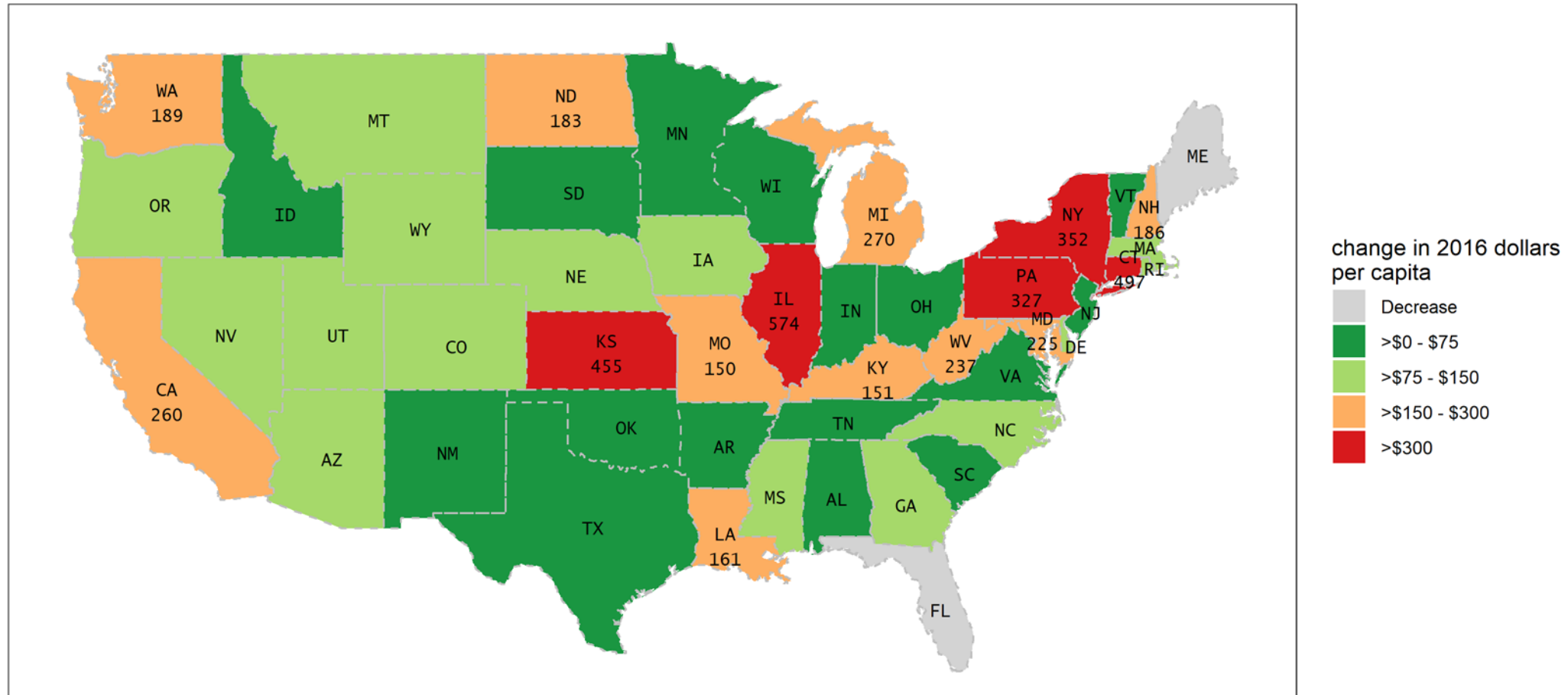


Source: Federal Reserve Board, Financial Accounts of the United States, Tables L.120.b and F.2  
Note: Liabilities are as valued by the Bureau of Economic Analysis, not actuaries.

# Employer contribution increases have varied greatly, causing differing degrees of fiscal stress

## Change in state & local government pension contributions

Inflation-adjusted dollars per capita, 2007 to 2016



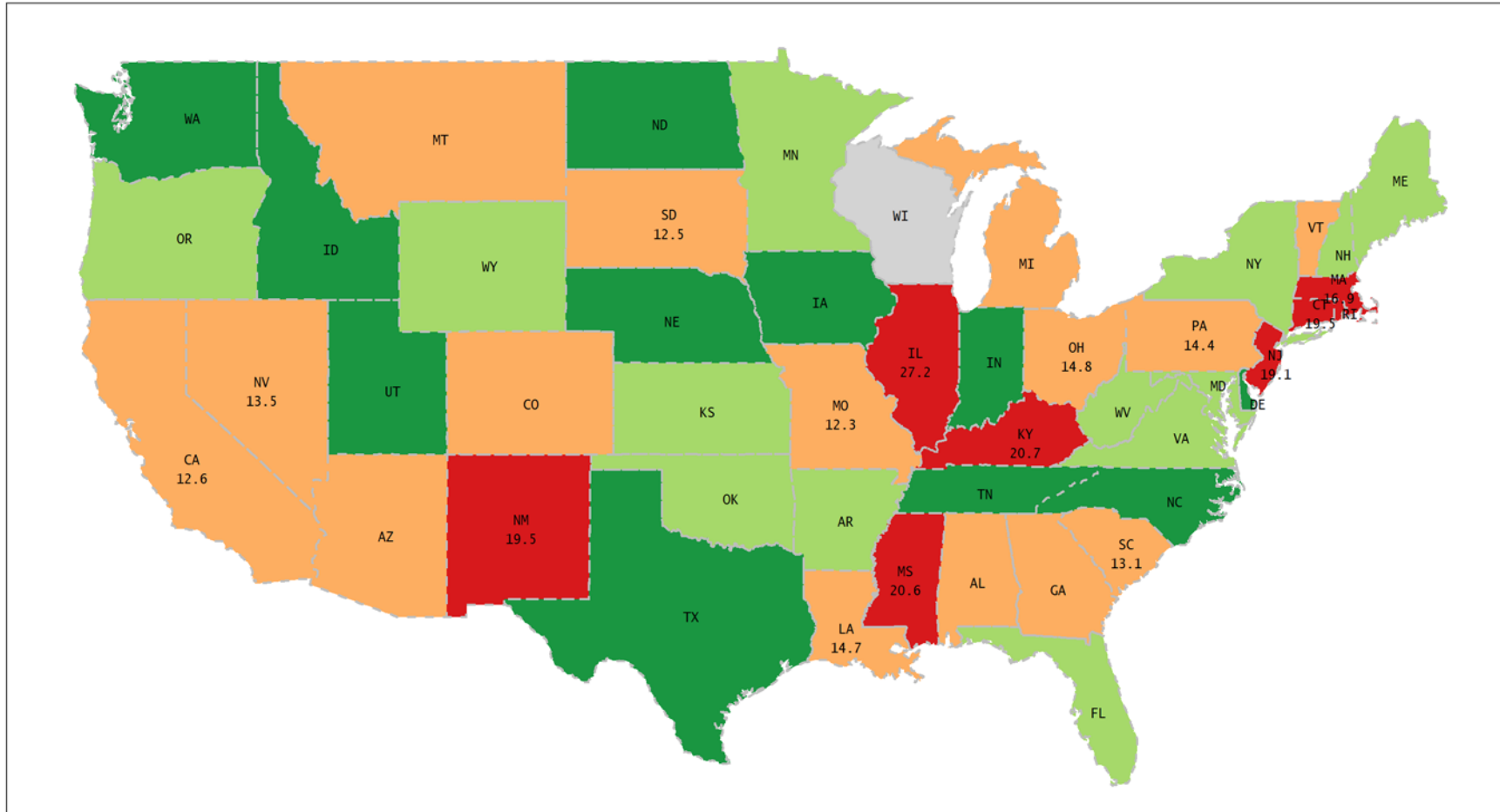
Source: Author's analysis of Annual Survey of Public Pensions, U.S. Bureau of the Census

Note: Due to extraordinary contributions in West Virginia in 2007, contributions for 2008 were used as the base year

# Unfunded liabilities relative to state economies vary greatly

Unfunded liability as % of state gross domestic product, 2015

State & locally administered plans combined



% of GDP

- Fully funded
- < 5%
- 5% to < 10%
- 10% to < 15%
- 15% or more

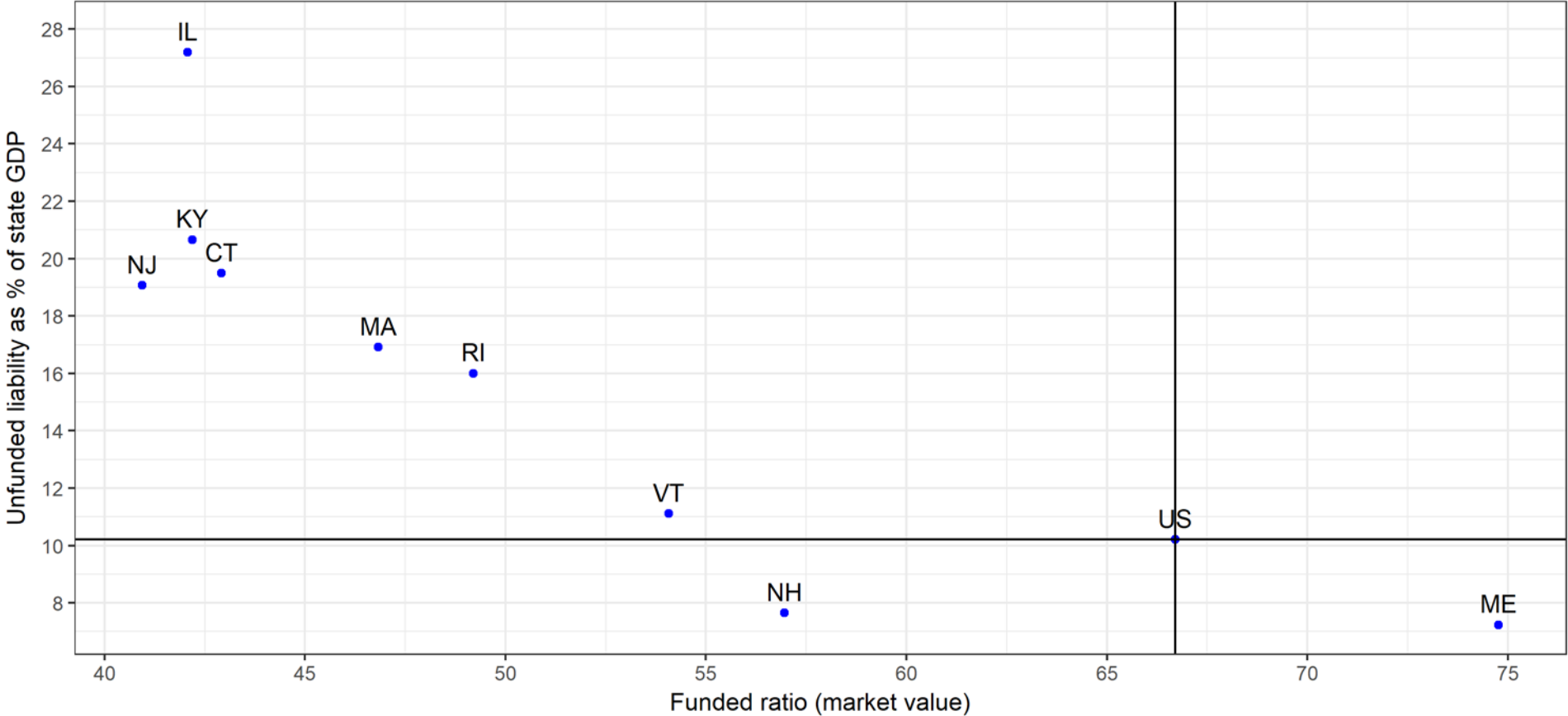
Note: Latest year of comprehensive data is 2015. Unfunded liabilities generally change slowly.

Source: Federal Reserve Board Enhanced Financial Accounts  
<https://www.federalreserve.gov/apps/fof/efa/efa-project-state-local-government-defined-benefit-pension-plans.htm>  
These numbers differ from actuaries' estimates, and reflect discounting at 5%.

# New England states ranged from extraordinarily challenged to slightly challenged (2015 data)

Funded ratios and unfunded liability as % of state GDP in 2015, selected states

Total of all state and local pension plans in a state, as valued by the U.S. Bureau of Economic Analysis (reflects a 5% discount rate)



Notes:

The further a dot is to the left, the more difficult the situation for pension plans.  
The higher a dot is, the more difficult solutions are likely to be for taxpayers and government stakeholders.

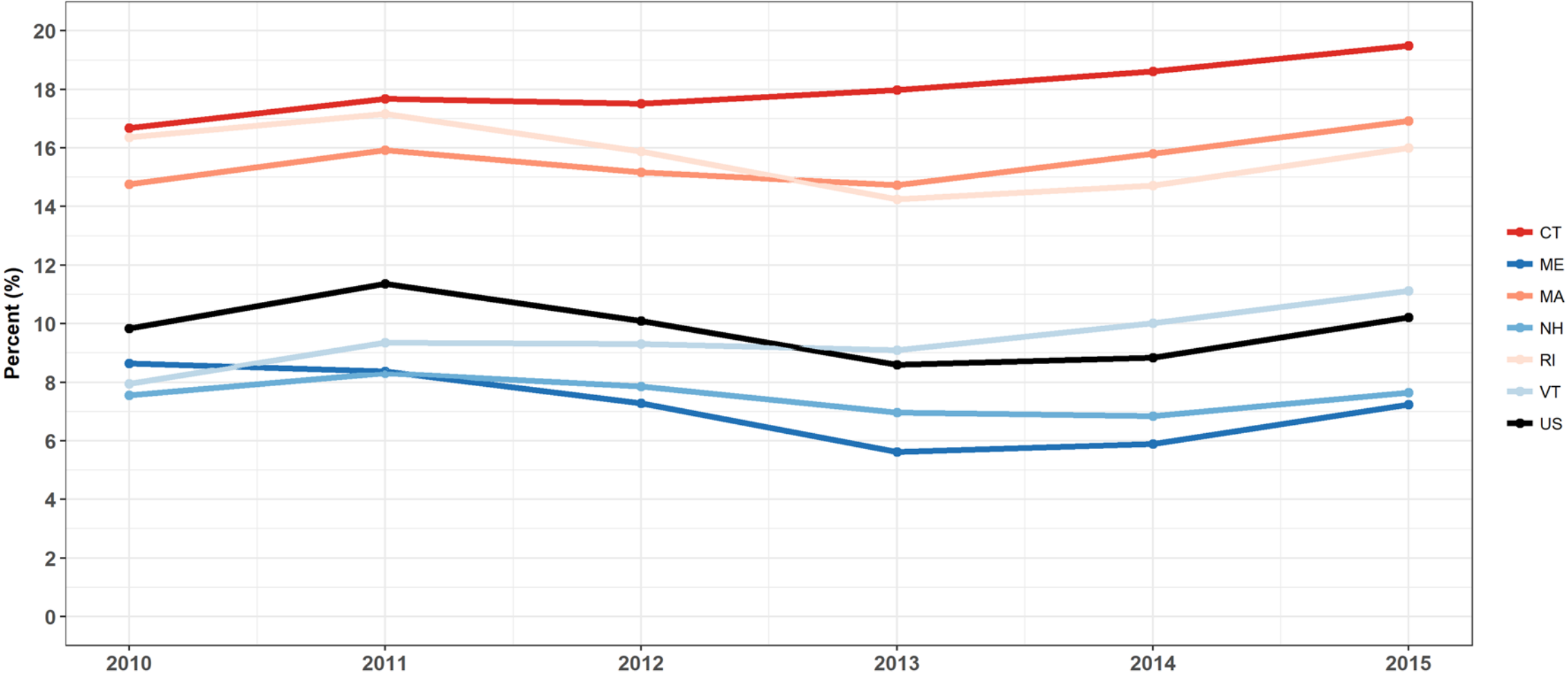
Source: <https://www.federalreserve.gov/apps/fof/efa/efa-project-state-local-government-defined-benefit-pension-plans.htm>



# States generally have made little progress on unfunded liabilities. RI reduction relatively large

## Unfunded liability as % of state gross domestic product

State & locally administered plans combined



Source: Federal Reserve Board Enhanced Financial Accounts  
<https://www.federalreserve.gov/apps/fof/efa/efa-project-state-local-government-defined-benefit-pension-plans.htm>  
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# Flawed incentives and weak institutions

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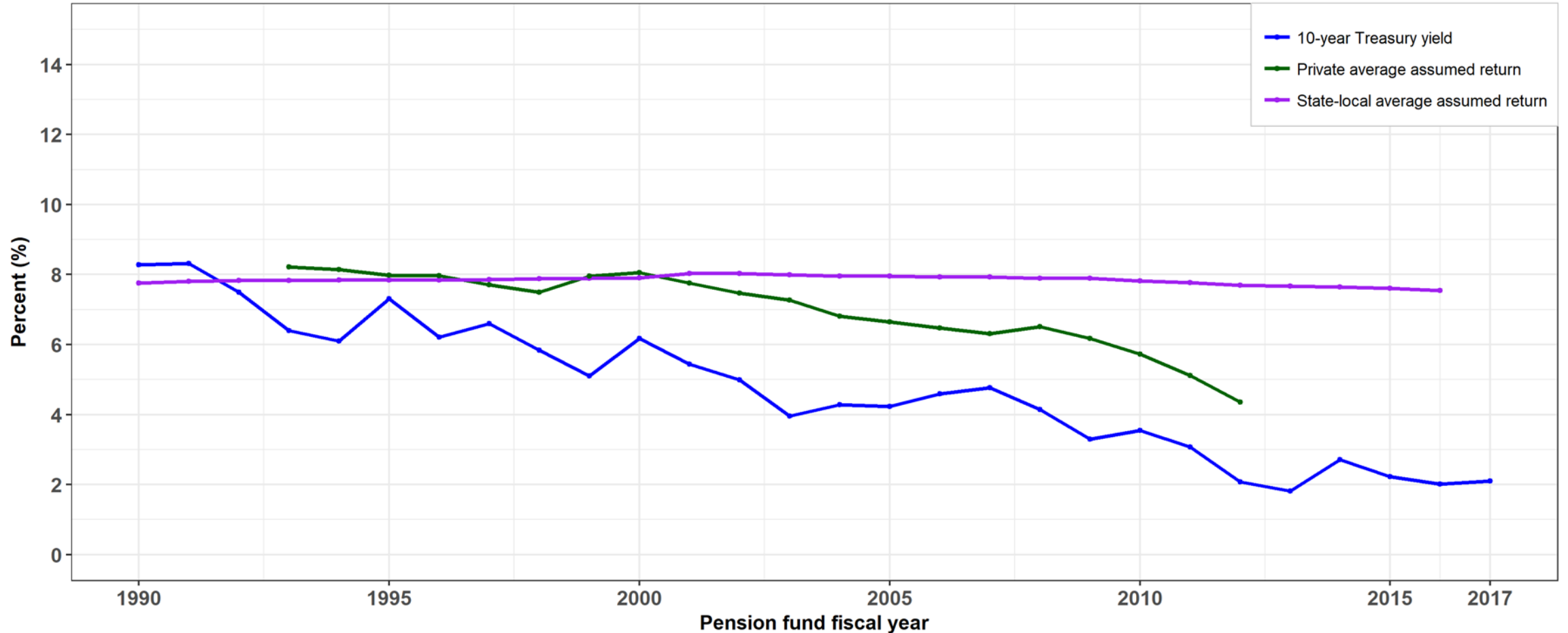
- Flawed incentives (from discount rate):
  - Understates true cost of benefits
  - Understates liabilities
  - Encourages investment risk-taking
- Weak institutions:
  - Backloaded contribution policies
  - Governments still often underpay
  - No “police” to make rules

# There Are No Police: The legal & regulatory environment

- Public pensions have strong legal protections that vary greatly across states. (Monahan)
- Not subject to ERISA (Employee Retirement Income Security Act) and related federal laws. Unlike private plans, no federal minimum-contribution rules.
- Not subject to IRS contribution rules, unlike private plans.
- Actuarial Standards Board (ASB) guidance applies equally to public and private plans. Standards provide great latitude for estimating and funding liabilities, don't guard against pressures and incentives that public plan actuaries face.
- Governmental Accounting Standards Board (GASB) guidance for financial reporting much weaker than of Financial Accounting Standards Board (FASB) for private plans. GASB not subject to oversight and requirements of SEC; FASB is.
- Congress has no role (so far). Occasional proposals.
- States can impose rules on local plans; some do. States can impose rules on themselves, but even state constitutional rules on funding can be avoided. Hard to tie own hands.

# Public plans have lowered return assumptions only slightly in response to declining risk-free rates

Assumed investment returns and risk-free returns  
Public and private retirement systems

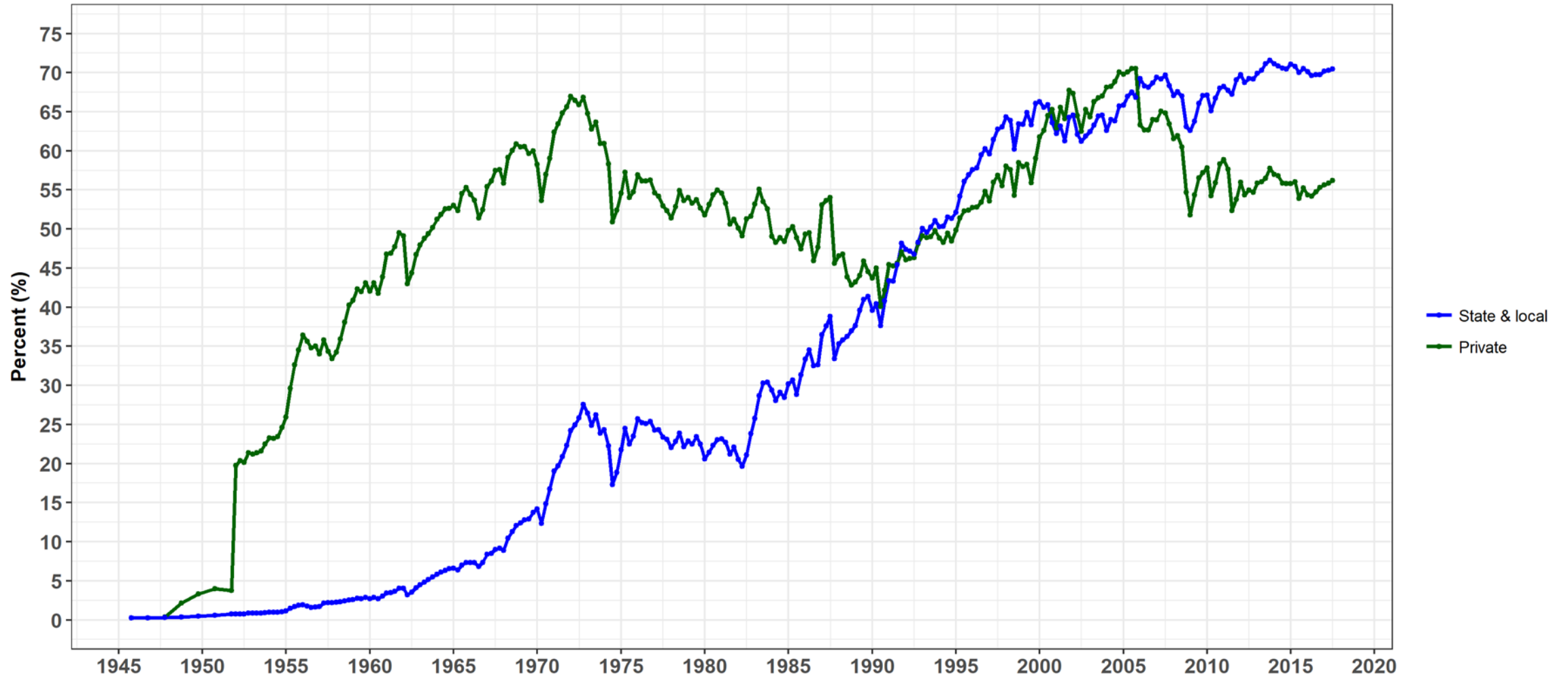


Notes:  
- Public plan assumptions for 2001+ from Public Plans Database, Center for Retirement Research. Earlier years from multiple sources.  
- Private plan assumptions provided via correspondence with authors of:  
Andonov, Aleksandar and Bauer, Rob and Cremers, Martijn, Pension Fund Asset Allocation and Liability Discount Rates (March 3, 2016). <http://ssrn.com/abstract=2070054>  
- 10-Year Treasury yield from Federal Reserve Bank of St. Louis (FRED)

# Public plans are increasingly invested in equity-like assets

## Equity-like investments as percentage of invested assets

State and local government and private sector defined benefit pension plans



# With investment risk, even IF assumptions are correct, a roller coaster path

Three individual simulations, all with 7.5% discount rate & 30-year 7.5% compound annual returns.

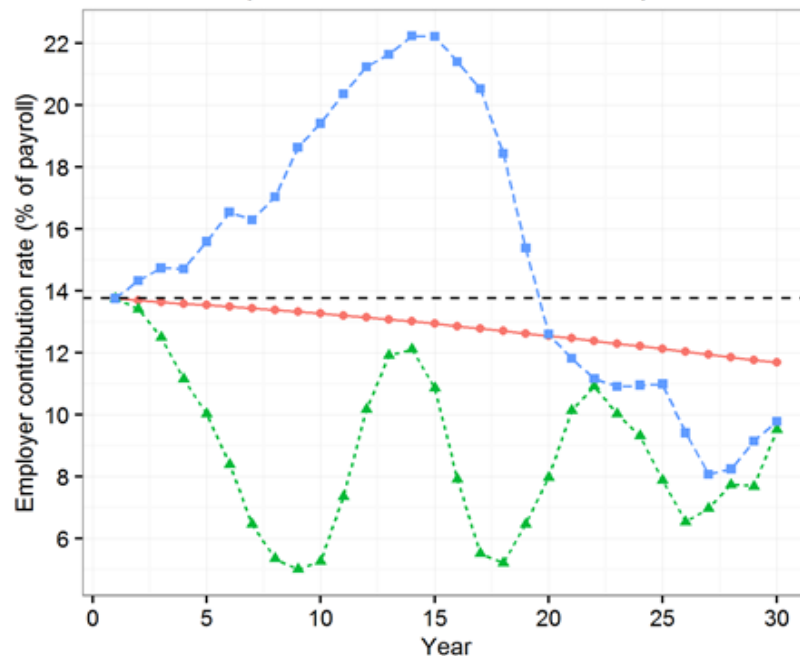
- **Deterministic run: constant returns**
- **Stochastic run: high returns in early years**
- **Stochastic run: low returns in early years**

*People* (politicians) interact with this system:

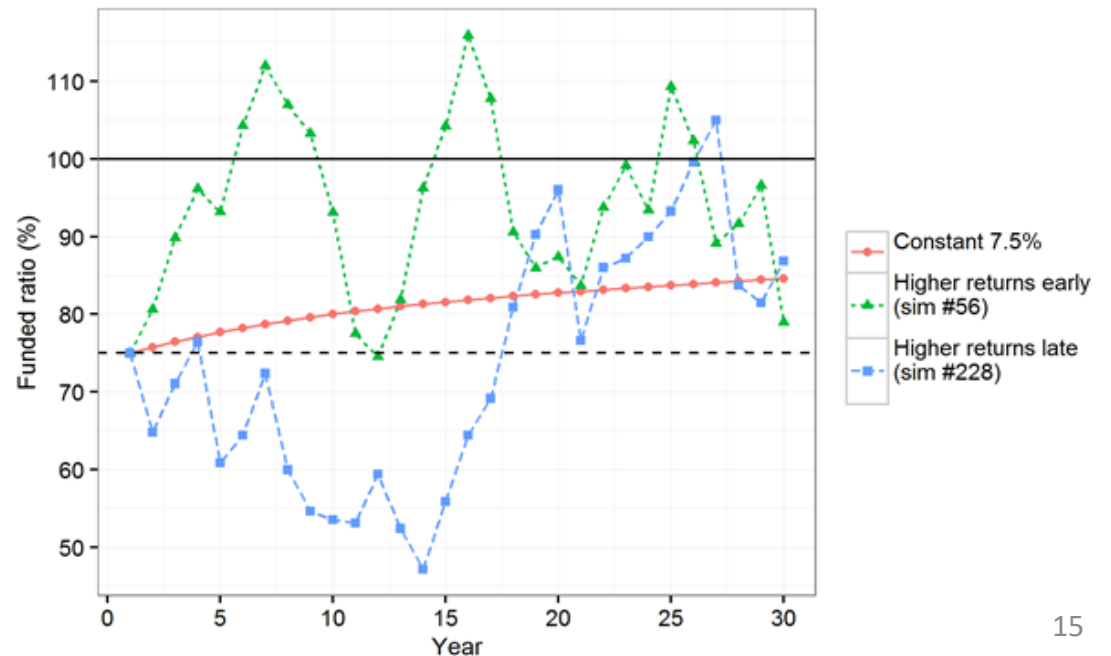
- Will they support 50+% contribution increases?
- Will they refrain from benefit increases and gimmicks if plan funding shoots above 100%?

And this is when return assumptions are met at 30 years. Most times, things will be better or worse than assumed.

### Employer contribution rate



### Funded ratio



# U.S. public plans, with unique regulatory environment, have increased risk. Other plans have not.

- Important paper: Andonov, Bauer, Cremers (2017). Examines, among other things, how U.S. public plans, private plans, and Canadian/European plans responded to Treasury rate declines.
- Their statistical analysis shows that other plans reduced discount rates as market rates declined, but not U.S. public plans.

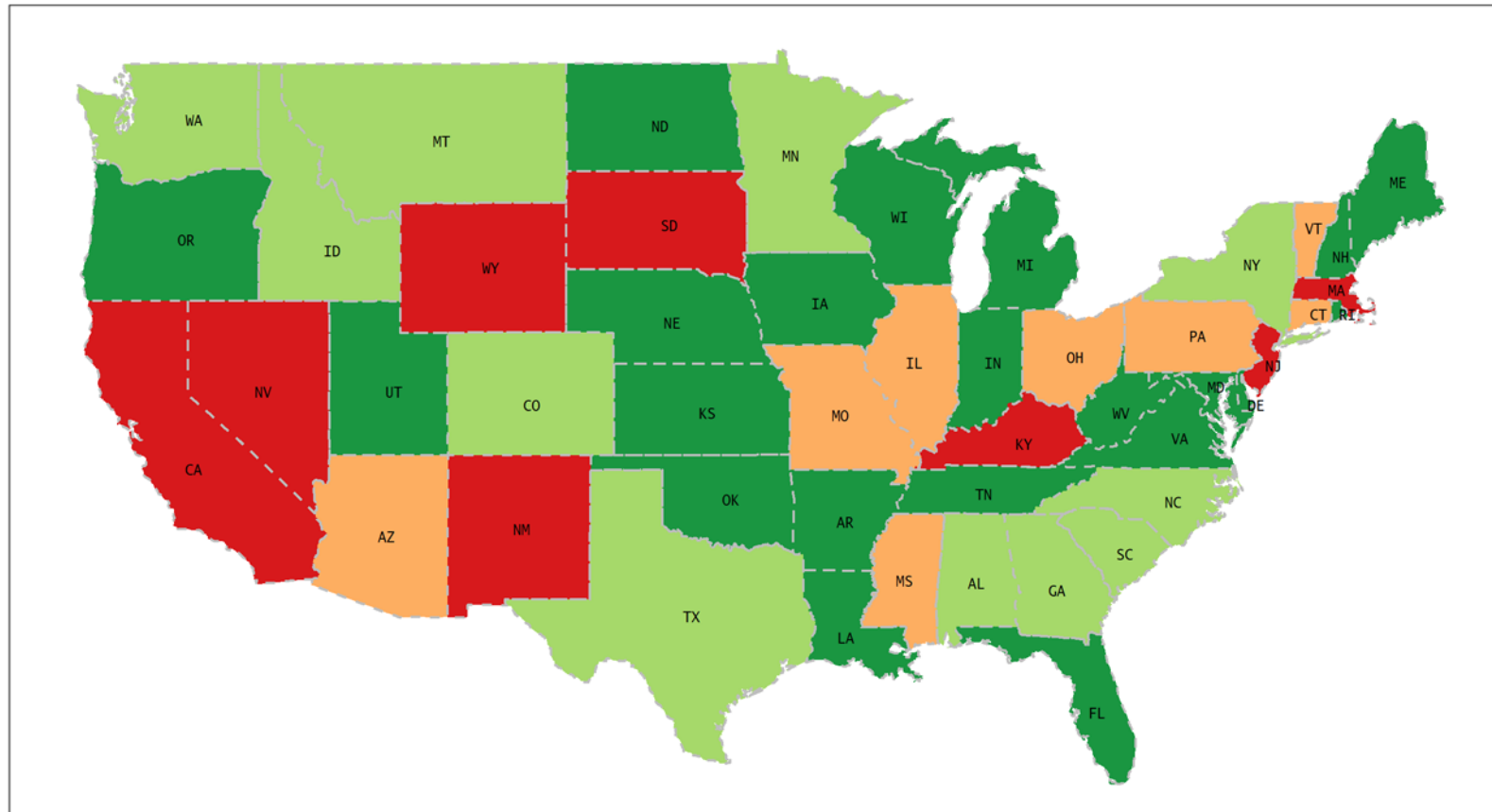
“U.S. public pension funds have become the biggest risk-takers among pension funds internationally”



# Reducing risk is expensive: Increases needed just to “tread water,” at 5% discount rate

## Employer contributions shortfall relative to normal cost plus interest, 2015

As % of state GDP, state & locally administered plans combined



Author's analysis and estimates based upon:

- Employer contributions from Census Bureau Annual Retirement System Survey (<https://www.census.gov/govs/retire>)
- Employer normal costs from Bureau of Economic Analysis (<http://www.bea.gov/regional/xls/PensionEstimatesByState.xlsx>)
- Unfunded liabilities from Federal Reserve Board (<https://www.federalreserve.gov/apps/fof/efa/efa-project-state-local-government-defined-benefit-pension-plans.htm>)

These numbers differ from actuaries' estimates, and reflect discounting at 5%.

# Policy options and action

# Important considerations in reform efforts

- Retirement security. Relationship to career lengths.
- Compensation competitiveness: recruitment, mobility, retention, treatment of short- vs. long-career employees
- Government capacity to pay over short and long run
- Risks to taxpayers and pension systems. Risk-sharing. Stress-testing.
- Reform incentives and institutions that encouraged current situation – e.g., require govts to pay ADC; discount rate; funding policies.

# Other issues and options

- Employee contribution increases – fairly common (but much smaller generally than employer increases)
- Employer-employee risk-sharing arrangements make a lot of sense. Over the long run, can drastically reduce risks to government. In the short run, if only applies to new workers, not much fiscal impact.

# Reducing unfunded liabilities – stylized view

People affected	What a government may be able to do*	Examples	Comments
<b>1. People who don't work for you yet</b>	Anything	<ul style="list-style-type: none"> <li>• New tiers</li> <li>• Hybrid DB-DC plans</li> <li>• Risk-sharing</li> </ul>	<b>NONE OF THE UAAL IS HERE.</b> A “stop digging” solution – can ease future costs, <i>slowly</i> . Competitiveness-as-employer issues. <b>Most reforms have been here.</b>
<b>2. People who work for you now:</b>			
(a) Service they have yet to render	Depends. “California rule” may prevent cuts. In IL, state Supreme Court said cannot change. (Can lay off workers, but not change benefits)	<ul style="list-style-type: none"> <li>• Reduce benefit factor for future service</li> <li>• Increase retirement age</li> <li>• Change COLA</li> </ul>	<b>A LITTLE UAAL CAN WIND UP IN HERE UNDER EAN COST METHOD BUT PROBABLY NOT MUCH.</b> In some circumstances, can be substantial. Potentially important in distressed situations (e.g., Detroit). ERISA allows for private plans.
(b) Service they've already rendered	Hard to cut benefits, legally, politically, morally.	<ul style="list-style-type: none"> <li>• Haircuts, future benefits</li> <li>• COLA cuts</li> <li>• Contingent COLAs</li> </ul>	<b>MOST UAAL, OTHER THAN THAT FOR RETIREES, IS HERE. BIG IMPACT ON PROBLEM.</b> Vested/non-vested distinctions matter, too.
<b>3. People who used to work for you (e.g., retirees)</b>	Hard to cut benefits, legally, politically, morally. Great variation. COLAs more susceptible to cuts than other benefits.	<ul style="list-style-type: none"> <li>• Haircuts, current benefits</li> <li>• COLA cuts or suspension for retirees</li> <li>• Contingent COLAs for retirees</li> </ul>	<b>MOST OF THE UAAL IS HERE (Often 50-60%). BIG IMPACT ON PROBLEM.</b>

\* Varies greatly across states. See Monahan.

UAAL = Unfunded Actuarial Accrued Liability. See appendix for other acronyms.

# Examples of recent changes

Change	New/recent hires	Current workers	Retirees
<b>DC option or mandate</b>	<p>Arizona corrections – mandate Arizona public safety -- election</p> <p>Connecticut State Employees Retirement System (SERS) - DB/DC hybrid plan</p> <p>Several other states/plans added DC options</p>		
<b>Normal retirement age</b>	Arizona public safety: 52.5 → 55	Dallas Police and Fire: 50 or 55 (depending on hire date), raised to 58	
<b>COLAs</b>	Arizona public safety: Fixed escalator contingent upon plan funded status	<p>Arizona public safety: Convert to CPI-based COLA from an “excess earnings” concept</p> <p>Arkansas Highway ERS capped</p> <p>Connecticut SERS: COLA revised for workers retiring after June 2022</p>	<p>Arizona public safety : Convert to CPI-based COLA from an “excess earnings” concept</p> <p>Arkansas Highway ERS capped</p> <p>Dallas Police and Fire: Suspended until 75% funded, then subject to board approval and financial benchmarks.</p>
<b>Employee contributions</b>		<p>Connecticut SERS +2% over 2 years</p> <p>Connecticut Teachers' Retirement Board +1%</p>	

# What if a government has made promises it cannot keep?

- Local governments
  - Bankruptcy is an option, if allowed by state.
  - All bets are off – bankruptcy is about breaking deals (and contracts).
  - Pain can be spread – to bondholders and to other creditors of the gov't, not just to workers and retirees.
  - In fact, in general, pensions have been relatively protected. Will they be if bankruptcy becomes more widespread?
- State governments
  - No bankruptcy option (now) – see David Skeel...
  - No explicit mechanism to spread pain to people other than workers and retirees.
  - But taxpayers, service beneficiaries, people who use infrastructure still hit, through political process – crowd-out. Probably not bondholders.
  - Could mechanisms be created that spread the pain more broadly?

# The outlook

- Gulp. How will the stock market do?
- 2017 was a good pension plan fiscal year – median large-plan returns were around 12%. Fiscal 2018 (generally ending June) ok.
- Still, earnings assumptions are HIGH. My advice to plans: “Show them no good news” – lower earnings assumptions at every opportunity, every time they have a good year.
- This means more contribution increases, more budgetary stress, and less political support for public pensions. The alternative is risk that strikes me as unacceptable.
- Remember, though: the problem varies greatly around the country. Some plans are reasonably well funded and unlikely to face trouble that governments can't get out of. Services will be constrained, but pensions will be paid. In some other places, laws and courts will be tested.



# Appendix

# Selected acronyms

ASB – Actuarial Standards Board. Organization that establishes professional standards for actuaries.

COLA – Cost of Living Adjustment. An adjustment to pension benefits that, in pure form, adjusts for changes in cost of living. In practice, often an automatic escalator or loosely connected to inflation.

CPI – Consumer Price Index. A measure of prices and inflation. Often used in COLA formulas.

DB – Defined Benefit plan. A type of pension plan in which the benefit is defined, and contributions adjust to ensure that it can be paid.

DC – Defined Contribution plan. A type of pension plan in which the contribution is defined, and retirement income depends upon funds accumulated.

ERISA – Employee Retirement Income Security Act of 1974 (as amended). Primary federal law governing private pension plans. Generally not applicable to public plans.

ERS – Employees Retirement System. Generic term for a pension fund for governmental employees. SERS is a State employees retirement system.

GASB – Governmental Accounting Standards Board. Organization that sets accounting and financial reporting standards for governments (including public pension plans).

TRS – Teachers' Retirement System. Generic term for a pension fund for teachers.

UAAL - Unfunded Actuarial Accrued Liability. The unfunded portion of benefits already earned, as defined by actuaries. Other measures often are higher.

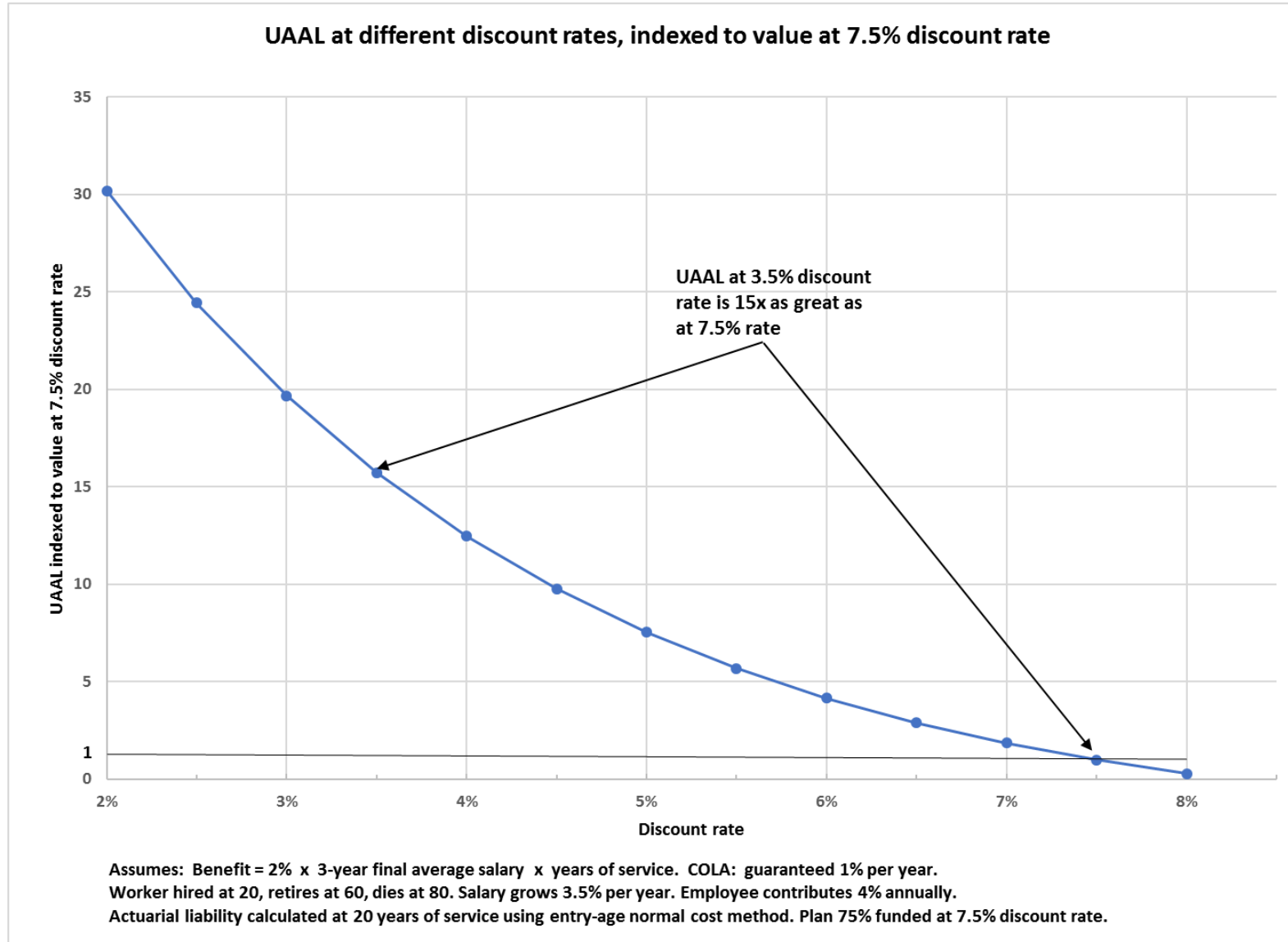
# Selected resources

- Pension simulation project (<http://rockinst.org/issue-areas/fiscal-analysis/fiscal-analysis-archive/public-pension-analysis/>)
- Center for Retirement Research, Boston College (<http://crr.bc.edu/>)
- Amy Monahan, University of Minnesota Law School, especially:
  - Monahan, A. B. “Public Pension Plan Reform: The Legal Framework.” *Education Finance and Policy* 5, no. 4 (2010): 617–646.
  - Monahan, Amy B. “State Fiscal Constitutions and the Law and Politics of Public Pensions.” *University of Illinois Law Review*, 2015, 117.  
[http://heinonlinebackup.com/hol-cgi-bin/get\\_pdf.cgi?handle=hein.journals/unilllr2015&section=7](http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/unilllr2015&section=7).

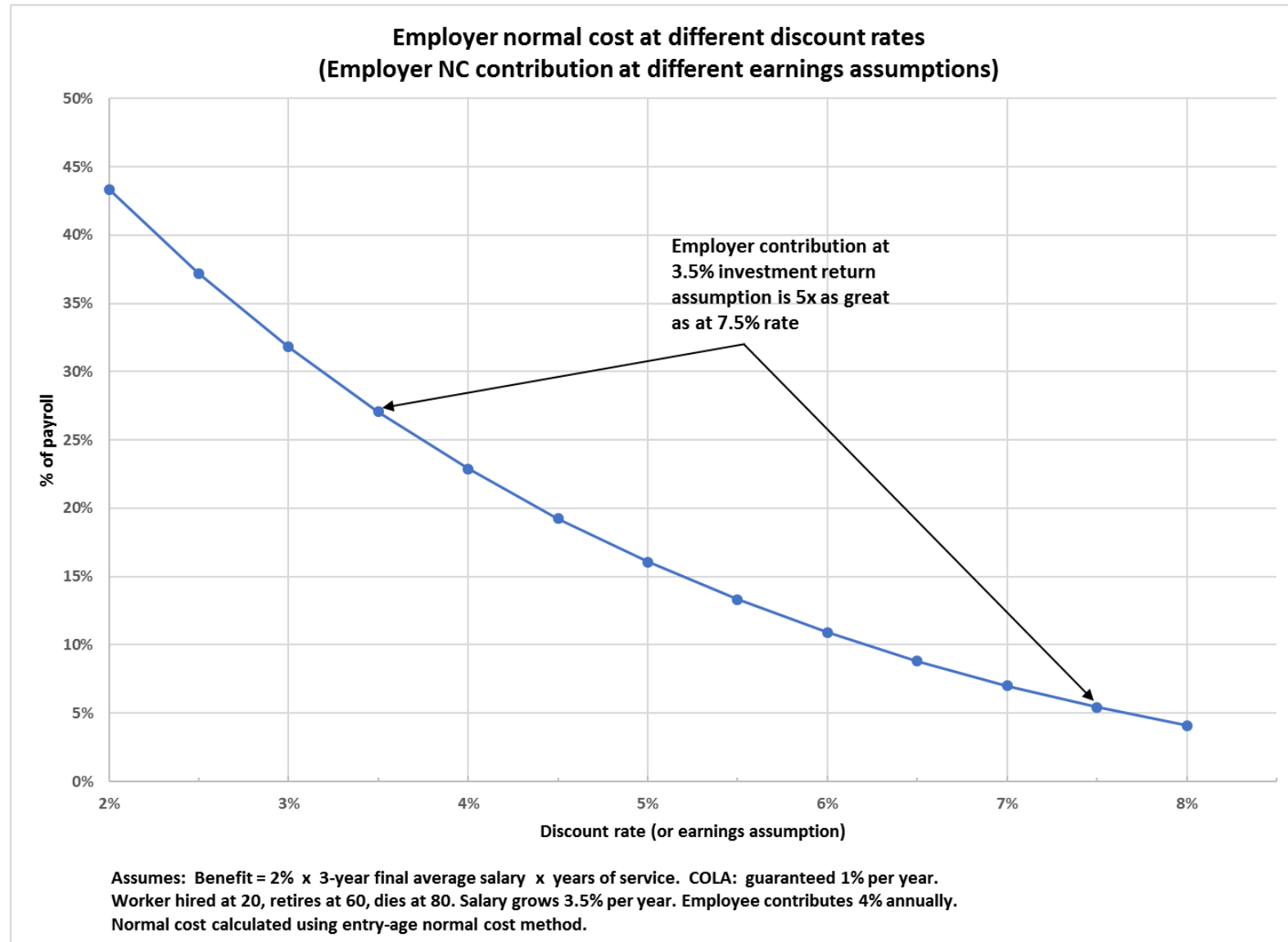
# The discount rate controversy

- Two separate but related concepts, often muddled:
  - Discount rate: used to value a future cash flow now (e.g., to determine the liability to report on financial statements).
  - Earnings assumption: what you think a specific investment portfolio will earn
- Financial theory is unambiguous: What you owe has nothing to do with how you invest. Liabilities should be discounted using rates that reflect their characteristics, not a plan's investment portfolio. Bond-like liabilities that must be paid should be discounted at approximately risk-free rates, *for purposes of reporting liabilities*.
- But public pension plans use an earnings assumption to value liabilities. It assumes they will take investment risk successfully, before it has happened.
- More investment risk → higher assumed return → lower contributions (now) → more money for everyone (except for future selves, kids, and grandkids). This is a BIG problem. **\$ trillions in play.**
- The choice of discount rate really matters. For example:
  - \$100 benefit to be paid in 20 years is liability of:
    - \$24 if discounted at 7.5% (typical plan assumption)
    - \$61 if discounted at 2.5% (similar to risk-free rate)
  - Liability at 2.5% is nearly 3x as great as at 7.5%! Even bigger impacts on UAAL.
- This is **NOT** a statement about how plans should invest. How much to invest in stocks and other risky assets is a separate decision.

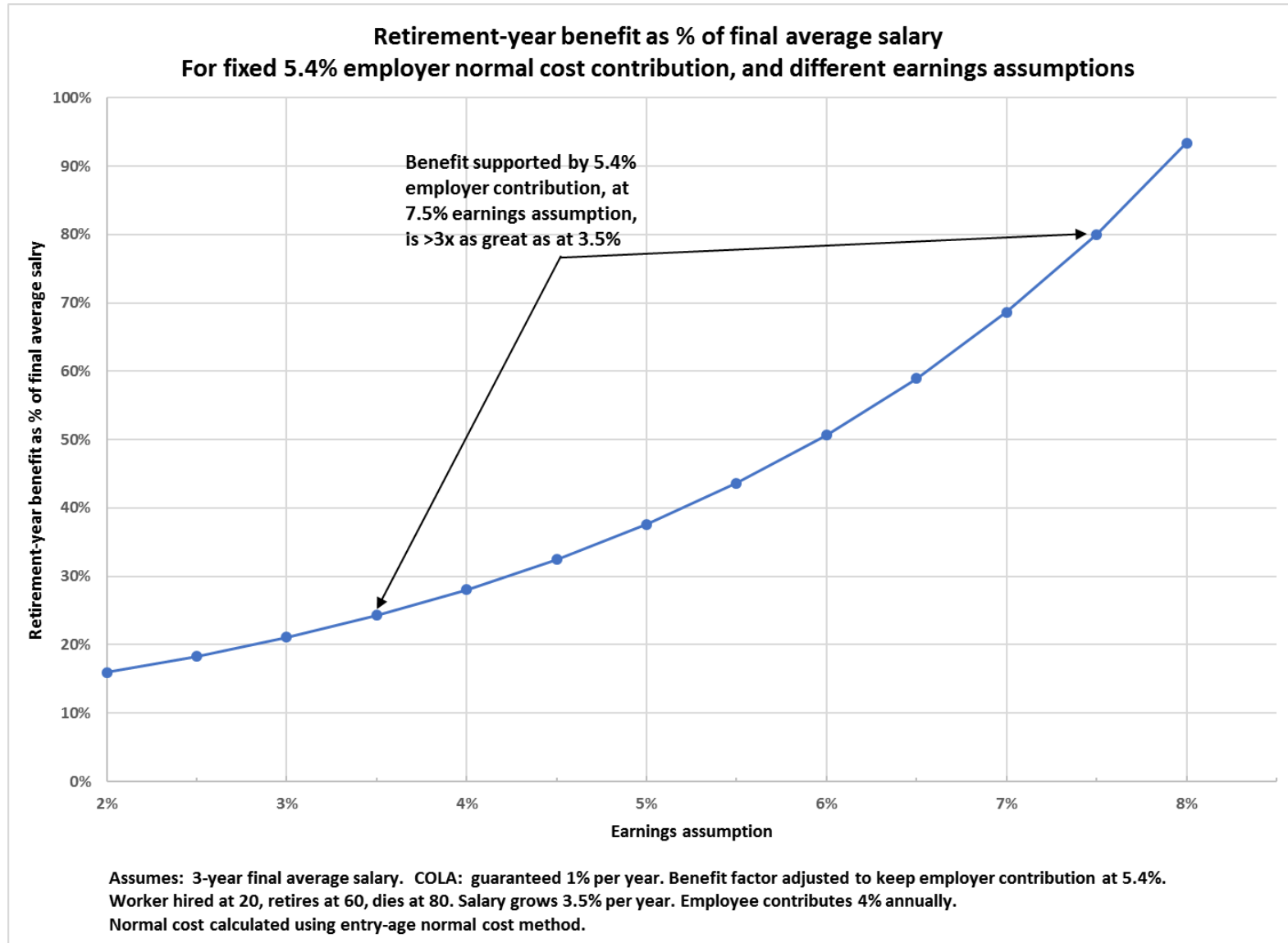
# Incentive: Higher discount rates → much better (reported) funded status



# Powerful incentive: Higher assumed investment returns → much lower contributions



# Flip-side powerful incentive: Ability to offer higher benefits for a given contribution level



# Discount rate example

**Liability today for \$100 paid in the future, different discount rates**

\$100 benefit to be paid in:	Discount rate			
	2.5%	5.0%	7.5%	10.0%
<i>1 year</i>	\$ 98	\$ 95	\$ 93	\$ 91
calculation -->	$\$100 / (1.025)^1$	$\$100 / (1.050)^1$	$\$100 / (1.075)^1$	$\$100 / (1.10)^1$
<i>10 years</i>	\$ 78	\$ 61	\$ 49	\$ 39
calculation -->	$\$100 / (1.025)^{10}$	$\$100 / (1.050)^{10}$	$\$100 / (1.075)^{10}$	$\$100 / (1.10)^{10}$
<i>20 years</i>	\$ 61	\$ 38	\$ 24	\$ 15
calculation -->	$\$100 / (1.025)^{20}$	$\$100 / (1.050)^{20}$	$\$100 / (1.075)^{20}$	$\$100 / (1.10)^{20}$